TABLE 2.—*Differences, in hours, of the mean durations of precipitation, for the period 1892-1901, as computed by Köppen's formula from hourly, six-daily and tridaily observations.*

Stations.	Mean of the monthly differences.		Greatest difference.		Least difference.	
	6-daily minus hourly.	3-daily minus hourly.	6-daily minus hourly.	3-daily minus hourly.	6-daily minus hourly.	3-daily minus hourly
Kumamoto	3.5	6.5	— 7.9	—15.3	± 1.3	— 0.6
Osaka	4.3	7.2	+20.7	—21.7	— 0.1	— 0.7
Tokio	1.4	4.0	— 3.1	+ 7.7	+ 0.2	— 0.2
Sapporo	2.3	5.4	— 5.3	+15.4	— 0.3	— 0.3

limits of error than those given above. An examination of the columns of differences in Table 1[4] will show that abnormally large and abnormally small differences often occur in the same month.

The self-registering rain gages in use by the Weather Bureau, although they may not show the true time of beginning and ending of precipitation, give with considerable accuracy the duration between the first and last recorded hundredths of an inch, and this information is for most purposes of more value than a record of total duration that does not distinguish the period of inappreciable precipitation.—*F. O. S.*

A RECORD BROKEN AT THOMPSON HILL, CONN.

Miss Ellen D. Larned, at Thompson Hill, Windham County, Conn., keeps a record of the weather extending back over the unusual period of fifty-three years. In a recent letter she writes that the year 1904 has lowered her previous minimum by nearly one degree.

	°
Previous lowest mean annual temperature, (1888)	44.8
Mean annual temperature for 1904	43.9
Mean annual temperature, 1852-1901	46.0
Warmest year, 1878	49.1
Coldest year, 1904	43.9

Miss Larned also notes that with the exception of May, 1904, each month since May, 1903, has been below the normal, a sequence without parallel in either her own record or any other that she has been able to examine. As the deficit was very small in some of the months it may not have occurred at other stations.—*F. O. S.*

THE WEATHER OF THE MONTH.

By Mr. WM. B. STOCKMAN, Chief, Division of Meteorological Records.

PRESSURE.

The distribution of mean atmospheric pressure is graphically shown on Chart VIII and the average values and departures from normal are shown in Tables I and VI.

The mean pressure for the month was unusually high over the northern and middle Plateau, the slope, Missouri and Mississppi valleys, and Gulf districts, with the crest 30.40 to 30.43 inches overlying northern and central South Dakota, North Dakota, and northeastern Montana.

The lowest mean pressure reported was 30.01 inches at Eastport, Me.

The pressure was everywhere above the normal for the month, except over the extreme southwestern portion and the northern portion of California, southwestern Oregon, and western Nevada. The greatest negative departure was —.04 inch at Eureka, while departures ranging from +.20 to +.30 inch were reported from stations in the Missouri Valley, Oklahoma, the middle and northern slope regions, and North Dakota, the greatest departures occurring in the Dakotas.

The mean pressure increased over that of December in all districts, except in southern Oregon, western Nevada, and the northern and central portions of California.

Over the region from Montana, North Dakota, and Minnesota, southeastward and southward to the Gulf coast of eastern Texas, Louisiana, Mississippi, and western Florida, the departures were very marked, and ranged from +.35 inch at stations in eastern Montana, and North Dakota to from +.11 to +.13 inch on the Gulf coast. The greatest decreases in pressure ranged from —.05 to —.08 inch over western Nevada and northern and central California.

TEMPERATURE OF THE AIR.

The mean temperature for the month was above the normal in the Pacific and Plateau districts, the northern slope, and western portions of the middle and southern slope regions, and the Valley of the Red River of the North. In the remaining districts the mean temperature was below the normal.

Over the greater portion of the Pacific and Plateau regions the departures from the normal ranged from +2.0° to +7.4°, the maximum departures occurring over northeastern Washington, Idaho, and northern Nevada.

From the slope regions eastward to the Atlantic Ocean the departures were very marked and ranged from —2.0° to —8.7°, the greatest departures, more than —6.0°, being reported from the central and lower Ohio Valley, Tennessee, the central and northern portions of the east Gulf States, eastern Arkansas, Oklahoma, southeastern Kansas, southern and central Missouri, and southern Illinois. The maximum departure occurred in east-central Kentucky.

Maximum temperatures ranging from somewhat below freezing to 91° occurred during the month. Maximum temperatures of 80°, or higher, were reported from central and southern Florida, the lower Rio Grande Valley, southwestern Arizona, and extreme southeastern California.

Zero temperatures occurred as far south as extreme northern Virginia, southern Tennessee, central Arkansas, southern Indian Territory, southern border of Oklahoma, northwestern Texas, northeastern New Mexico, southern boundary of Utah, and central Nevada. Minimum temperatures of 30°, or more, below zero were reported from portions of Wisconsin, Minnesota, the Dakotas, northeastern Montana, the interior of Maine, and northeastern New Hampshire.

The average temperatures for the several geographic districts and the departures from the normal values are shown in the following table:

Average temperatures and departures from normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	8	21.3	— 3.2		
Middle Atlantic	12	28.5	— 3.4		
South Atlantic	10	41.6	— 4.3		
Florida Peninsula*	8	55.4	— 4.2		
East Gulf	9	42.8	— 5.6		
West Gulf	7	48.3	— 2.9		
Ohio Valley and Tennessee	11	27.4	— 6.5		
Lower Lake	8	21 0	— 4.3		
Upper Lake	10	14.1	— 3.4		
North Dakota*	8	0.7	— 4.9		
Upper Mississippi Valley	11	16.0	— 5.1		
Missouri Valley	11	15.1	— 5.2		
Northern Slope	7	18.2	+ 0.7		
Middle Slope	6	24.7	— 4.3		
Southern Slope*	6	34.3	— 4.5		
Southern Plateau*	13	40.8	+ 3.1		
Middle Plateau*	8	28.5	+ 3.6		
Northern Plateau*	12	29.1	+ 3.7		
North Pacific	7	41.3	+ 2.0		
Middle Pacific	5	49.4	+ 2.8		
South Pacific	4	55.2	+ 4.6		

* Regular Weather Bureau and selected voluntary stations.

[4] The reader may observe one or two discrepancies in this table. These are doubtless due to misprints in the original.

In Canada.—Prof. R. F. Stupart says:

The temperature was a little above the average in Assiniboia, western Manitoba, parts of Saskatchewan, and on Vancouver Island; elsewhere in the Dominion it was below the average, especially from Lake Superior to Cape Breton, many localities recording negative departures of from 5° to 6°, and some few as much as 8°.

The temperature was 10°, or more, below the normal generally over the geographic districts on the following days: New England 4th, 5th, 14th, 15th, 23d, to 26th, and 31st, and in the northern portions on the 6th; Middle Atlantic States 4th, 14th, 15th, 25th to 27th, and 29th to 31st, and in the northern portion on the 5th; South Atlantic States 4th, 7th, 8th, 14th to 16th, and 25th to 27th, and in southern portion on the 5th, and scattered over the district 29th to 31st; Florida Peninsula 4th, 8th, 16th, and 25th to 28th; east Gulf States 4th, 7th, 8th, 14th to 17th, 25th to 27th, and 31st, and in the western portion on the 30th, west Gulf States 13th to 16th, 25th and 26th, in the central portion on the 27th, and scattered on the 30th and 31st; Ohio Valley and Tennessee 4th, 14th to 16th, and 24th to 31st, and scattered on the 3d and 8th to 10th; lower Lake region 14th, 15th, 25th, 26th, and 28th to 30th, and in the eastern portion of the 3d and 4th, western portion on the 10th, and eastern portion on the 31st; upper Lake region 28th to 31st, and in the southwestern portion on the 10th, and scattered 13th to 15th, and 24th to 26th; North Dakota 9th to 11th, 23d to 25th, and 27th to 31st; upper Mississippi Valley 10th, 13th to 15th, 24th to 26th, and 28th to 31st; Missouri Valley 9th to 15th, 24th, 25th, and 29th to 31st, scattered on the 16th, in the southern portion on the 26th, and in the northern portion on the 28th; northern slope 9th to 14th, and 29th to 31st; middle slope 10th to 16th, in the eastern portion 24th to 26th, and scattered 29th to 31st; southern slope 10th to 15th and 25th; middle Plateau in portions 12th to 15th, and 17th; northern Plateau scattered 11th to 13th; and scattered in the north Pacific region on the 12th.

PRECIPITATION.

The distribution of total monthly precipitation is shown on Chart III.

The precipitation during the month was unequally distributed, but it was below the normal in the Ohio Valley and Tennessee, the Southern Atlantic States, Florida Peninsula, upper Lake region, western lower Lake region, upper Mississippi Valley, North Dakota, northern slope region, northern and middle Plateau regions, and the Pacific districts, except north-central and extreme southern California. The precipitation was above the normal in the southern Plateau, and middle and southern slope regions, portions of southern Missouri and southern Illinois, along the coast of eastern Texas, Louisiana, Mississippi, Alabama, western Florida, the southern portion of the Middle Atlantic States, eastern lower Lake region, eastern New England, and north-central and extreme southern California.

The greatest deficiencies in precipitation occurred in the central portions of the South Atlantic States, eastern Tennessee, central Ohio, east-central Texas, west-central Nevada, on the coasts of central and extreme northern California, northwestern Washington, and western Oregon. The greatest excesses in precipitation were reported from central and eastern Arizona, and north-central California.

Precipitation occurred generally over New England on the 2d to 4th, 6th, 7th, 12th, 21st, 22d, 24th to 26th, and 28th. Middle Atlantic States, 2d, 3d, 6th, 7th, 11th to 14th, 24th, 25th, 29th, and 30th. South Atlantic States, 2d, 3d, 6th, 11th to 14th, 19th, 24th, 29th, and 30th. Florida Peninsula, 3d, 6th, and 13th to 15th. East Gulf States, 1st, 2d, 5th, 6th, 9th, 11th to 13th, 19th, 23d, and 29th. West Gulf States, 5th, 8th to 12th, 18th, 28th, and 31st. Ohio Valley and Tennessee, 2d, 3d, 5th to 14th, 19th, 24th, and 29th. Lower Lakes, 2d to 9th, 11th to 16th, 18th, 19th, 21st, 24th, 25th, 27th, 28th, and 31st. Upper Lakes, 1st, 4th to 9th, 11th, 12th, 23d, 24th, 27th, and 31st. Upper Mississippi Valley, 2d, 5th, 9th, 11th, 23d, and 30th. Missouri Valley, 6th, 7th, 10th, 11th, 29th, and 30th. North Dakota, 6th, 8th, 20th, and 23d. Northern slope, 21st to 23d, 28th, and 29th. Middle slope, 10th, 11th, and 29th to 31st. Southern slope, 9th to 12th. Southern Plateau, 1st, 9th, and 10th. Middle Plateau, 11th, 21st, and 22d. Northern Plateau, 13th to 15th, 19th, 21st to 23d, and 27th. North Pacific, 1st to 3d, 12th to 16th, 19th, and 21st to 27th. Middle Pacific, 8th, 12th to 15th, 18th, 20th to 22d, 24th, 30th, and 31st. Southern Pacific, 9th, 15th, 16th, and 21st.

The southern limits of snowfall extended to central Georgia, into the northern portions of Alabama and Mississippi, the southern portion of Arkansas, south-central portion of Texas, southern New Mexico, and central Arizona, and the western limit into east-central and extreme northern California, and to the coasts of Oregon and Washington.

Average precipitation and departure from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		*Inches.*	*Inches.*
New England	8	3.92	106	+0.2	.....
Middle Atlantic	12	3.46	100	0.0	.....
South Atlantic	10	2.08	50	—2.1	.....
Florida Peninsula*	8	1.40	50	—1.4	.....
East Gulf	9	5.52	104	+0.2	.....
West Gulf	7	2.95	86	—0.5	.....
Ohio Valley and Tennessee	11	2.52	60	—1.7	.....
Lower Lake	8	2.55	96	—0.1	.....
Upper Lake	10	1.43	71	—0.6	.....
North Dakota*	8	0.22	42	—0.3	.....
Upper Mississippi Valley	11	1.26	76	—0.4	.....
Missouri Valley	11	1.09	110	+0.1	.....
Northern Slope	7	0.55	85	—0.1	.....
Middle Slope	6	0.86	113	+0.1	.....
Southern Slope*	6	1.25	76	—0.4	.....
Southern Plateau*	13	1.78	182	+0.8	.....
Middle Plateau*	8	0.86	74	—0.3	.....
Northern Plateau*	12	1.36	66	—0.7	.....
North Pacific	7	5.51	73	—2.0	.....
Middle Pacific	5	4.91	94	—0.3	.....
South Pacific	4	2.00	71	—0.8	.....

*Regular Weather Bureau and selected voluntary stations.

In Canada.—Professor Stupart says:

The precipitation was largely above the average in nearly all portions of the Maritime Provinces. In Quebec, at Montreal the average precipitation was slightly exceeded, but in the Province generally it was very deficient. In Ontario, north from Lake Ontario to the Georgian Bay region and east to the boundary, it was generally well above the average and elsewhere generally below, the western and southern counties especially showing a marked deficiency. From the Lake Superior district to the British Columbia coast the precipitation was below the average except in one or two isolated places, noticeably Calgary, which recorded a positive departure of half an inch. The deficiency, however, was not marked except at coast stations and on Vancouver Island, New Westminster giving a negative departure of 1.2 inches and Victoria 2.0 inches.

Depth of snow on ground.—At the close of the month the whole of the Dominion, except a portion of British Columbia, was covered with snow. In the territories of Manitoba the depth, apparently, nowhere exceeded 10 inches, and in Cariboo it is reported as only 18 inches. In the Peninsula of Ontario the depth of snow was also moderate, being in striking contrast to the conditions prevailing at the same time last year when the great depth of snow hampered all kinds of travel. From the Georgian Bay region north and east the amount is from 18 to over 40 inches, in Quebec from 24 to 49 inches, and in the Maritime Provinces from 26 to 46 inches, these amounts being unusually large for the latter Provinces.

HUMIDITY.

The mean relative humidity was normal in North Dakota; below normal in the Atlantic and Gulf States and the upper Lake, northern Plateau, and northern Pacific regions, and above normal in the remaining districts. The positive departures in the northern and middle slope and southern Plateau regions were very marked.

The averages by districts appear in the following table:

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
	%			%	
New England	73	— 3	Missouri Valley	79	+ 4
Middle Atlantic	74	— 2	Northern Slope	80	+10
South Atlantic	72	— 5	Middle Slope	77	+10
Florida Peninsula	78	— 3	Southern Slope	70	+ 4
East Gulf	77	— 1	Southern Plateau	62	+10
West Gulf	74	— 2	Middle Plateau	74	+ 4
Ohio Valley and Tennessee	78	+ 1	Northern Plateau	84	— 1
Lower Lake	82	+ 1	North Pacific	82	— 4
Upper Lake	81	— 2	Middle Pacific	83	+ 2
North Dakota	80	0	South Pacific	74	+ 2
Upper Mississippi Valley	84	+ 6			

WIND.

The maximum wind velocity at each Weather Bureau station for a period of five minutes is given in Table I, which also gives the altitude of Weather Bureau anemometers above ground.

Following are the velocities of 50 miles and over per hour registered during the month:

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Block Island, R. I.	3	66	n.	Nantucket, Mass.	4	54	ne.
Do	4	63	ne.	Do	7	54	se.
Do	7	53	se.	Do	25	70	ne.
Do	24	51	ne.	Do	26	60	n.
Do	25	70	n.	New Haven, Conn.	3	53	ne.
Do	26	54	nw.	New York, N. Y.	7	50	se.
Buffalo, N. Y.	7	56	w.	North Head, Wash	1	64	se.
Do	8	60	w.	Do	2	70	se.
Do	15	51	w.	Do	3	50	s.
Do	16	54	w.	Do	23	66	se.
Cape Henry, Va.	4	50	nw.	Do	24	60	s.
Do	25	58	nw.	Do	25	58	s.
Do	26	53	nw.	Do	26	56	se.
Cleveland, Ohio	25	50	n.	Do	27	60	s.
Columbia, S. C.	25	52	nw.	Portland, Me.	7	55	se.
Duluth, Minn.	9	50	nw.	Syracuse, N. Y.	12	55	s.
Eastport, Me.	7	60	se.	Tatoosh Island, Wash.	1	62	s.
Hatteras, N. C.	3	56	w.	Do	2	64	s.
Do	6	50	s.	Do	3	50	nw.
Do	25	52	nw.	Do	12	82	e.
Do	26	50	nw.	Do	13	83	e.
Mount Tamalpais, Cal.	10	58	nw.	Do	14	68	e.
Do	11	64	nw.	Do	15	60	e.
Mount Weather, Va.	1	53	nw.	Do	21	52	e.
Do	4	58	nw.	Do	25	55	s.
Do	25	64	nw.	Do	26	50	s.
Do	26	64	nw.	Do	30	58	e.
Nantucket, Mass.	3	55	ne.	Do	31	70	e.

ATMOSPHERIC ELECTRICITY.

Thunderstorms.—Reports of 148 thunderstorms were received during the current month as against 427 in 1904 and 253 during the preceding month.

The dates on which the number of reports of thunderstorms for the whole country was most numerous were: 11th, 45; 12th, 38; 25th, 10.

Reports were most numerous from: Texas, 45; Arkansas, 20; Oregon, 16.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the dates of full moon, viz, January 17 to 25, inclusive.

In Canada: No thunderstorms were reported. Hamilton, Bermuda, reported thunderstorms on the 20th, 24th, 25th, 26th, and 27th.

Auroras were reported from Grand Manan, 5th, 14th; Father Point, 5th; Quebec, 5th, 14th; White River, 5th; Minnedosa, 1st, 6th, 11th, 15th, 17th, 31st; Qu'Appelle, 6th, 29th, 31st; Swift Current, 16th; Edmonton, 4th, 5th, 6th, 7th, 10th, 17th, 31st; Prince Albert, 17th, 18th; Battleford, 16th, 31st.

CLEAR SKY AND CLOUDINESS.

The cloudiness was normal in New England and the upper Mississippi Valley; below normal in the South Atlantic and east Gulf States, Florida Peninsula, and upper Lake regions; and above normal in the remaining districts.

The distribution of clear sky is graphically shown on Chart IV, and the numerical values of average daylight cloudiness, both for individual stations and by geographic districts, appear in Table I.

The average for the various districts, with departures from the normal, are shown in the following table:

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	5.8	0.0	Missouri Valley	5.5	+ 0.4
Middle Atlantic	6.0	+ 0.4	Northern Slope	5.9	+ 1.3
South Atlantic	4.9	— 0.4	Middle Slope	5.2	+ 1.4
Florida Peninsula	4.3	— 0.4	Southern Slope	4.6	+ 0.8
East Gulf	5.4	— 0.2	Southern Plateau	3.9	+ 1.0
West Gulf	5.7	+ 0.3	Middle Plateau	6.1	+ 1.3
Ohio Valley and Tennessee	6.7	+ 0.3	Northern Plateau	7.6	+ 0.3
Lower Lake	7.6	+ 0.1	North Pacific	7.2	+ 0.1
Upper Lake	6.7	— 0.1	Middle Pacific	6.8	+ 1.7
North Dakota	5.0	+ 0.3	South Pacific	6.1	+ 2.0
Upper Mississippi Valley	5.3	0.0			

DESCRIPTION OF TABLES AND CHARTS.

By Mr. WM. B. STOCKMAN, Chief, Division of Meteorological Records.

Table I gives, for about 137 Weather Bureau stations making two observations daily and for about 31 others making only one observation, the data ordinarily needed for climatological studies, viz, the monthly mean pressure, the monthly means and extremes of temperature, the average conditions as to moisture, cloudiness, movement of the wind, and the departures from normals in the case of pressure, temperature, and precipitation, the total depth of snowfall, and the mean wet-bulb temperatures. The altitudes of the instruments above ground are also given.

Table II gives, for about 2,800 stations occupied by voluntary and other cooperating observers, the highest maximum and the lowest minimum temperatures, the mean temperature deduced from the average of all the daily maxima and minima, or other readings, as indicated by the numeral following the name of the station, the total monthly precipitation, and the total depth in inches of any snow that may have fallen. When the spaces in the snow column are left blank it indicates that no snow has fallen, but when it is possible that there may have been snow of which no record has been made, that fact is indicated by leaders, thus (. . . .).

Table III gives, for all stations that make observations at 8 a. m. and 8 p. m., the four component directions and the resultant directions of the wind based on these two observations only and without considering the velocity. The total movement for the whole month, as read from the dial of the Robinson anemometer, is given for each station in Table I.

Table IV gives a record of rains whose intensity at some period of the storm's continuance equaled or exceeded the following rates:

Duration, minutes	5	10	15	20	25	30	35	40	45	50	60	80	100	120
Rates per hour (ins.)	3.00	1.80	1.40	1.20	1.08	1.00	0.94	0.90	0.86	0.84	0.75	0.60	0.54	0.50

In the northern part of the United States, especially in the colder months of the year, rains of the intensities shown in the above table seldom occur. In all cases where no storm of sufficient intensity to entitle it to a place in the full table has occurred, the greatest rainfall of any single storm has been given, also the greatest hourly fall during that storm.